

INFORMATION SHEET

ORDER NO. R5-2004-_____
SOUTH FEATHER WATER AND POWER AGENCY
MINERS RANCH TREATMENT PLANT
BUTTE COUNTY

GENERAL INFORMATION

The South Feather Water and Power Agency (hereafter, the Discharger) submitted an Application/Report of Waste Discharge, dated 23 September 2002, and applied to renew its permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Miners Ranch Water Treatment Plant. The Discharger is currently regulated under Waste Discharge Requirements Order No. 98-063 (NPDES No. CA0083143), adopted by the Regional Water Quality Control Board (Regional Board) on 17 April 1998.

The Discharger owns and operates a water treatment plant (WTP) with a design capacity to provide up to 14.4 million gallons per day (mgd) of potable water for domestic and agricultural purposes. The facility is located in Section 18, Township 19 North, and Range 5 East of the Mt. Diablo Base Line and Meridian on Assessor's Parcel No. 069-390-002. Treated wastewater is discharged at latitude 39° 31' 6" and longitude 121° 27' 30" to Miners Ranch Reservoir, a man-made impoundment adjacent to Lake Oroville. Miners Ranch Reservoir inflow is from the Dischargers system of canals and tunnels that deliver water from foothill and mountain reservoirs. Outflow from Miners Ranch Reservoir is to the Feather River via the Kelly Ridge Tunnel and Penstock. An agricultural water canal also diverts water directly from Miners Ranch Reservoir. The WTP intake structure is located in the outlet canal from Miners Ranch Reservoir to the Kelly Ridge Tunnel. The WTP lies within the Oroville Reservoir Hydrologic Sub Area (518.12), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

Typically, the WTP operates as a direct filtration plant in summer months and uses its settling capability ahead of filtration in winter months. Alum and a polymer are added to aid flocculation, and prechlorination occurs immediately before filtration. Filtered water is chlorinated again before entering a 1.5 million gallon clearwell. The use of zinc orthophosphate as a corrosion inhibitor has recently been discontinued, as the District is steadily replacing distribution system piping with non-corrosive materials.

Treated water is used to backwash filters, and the filter backwash water is then dechlorinated and discharged to a wash water settling basin. From the settling basin, clarified water is discharged to Miners Ranch Reservoir, and solids are discharged to a sludge basin. The WTP has piping in place for filter-to-waste discharges; however, the Discharger has never used and does not intend to use this capability. Solids from flocculation/sedimentation steps are discharged directly to the sludge basin. Supernatant and underflow from the sludge basin is infrequently discharged to the effluent line from the settling basin and ahead of the outfall. Sludge is stockpiled on site prior to being taken to a landfill.

BENEFICIAL USES

Surface Water

The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies adopted by the State Water Resources Control Board (State Board) and incorporated by reference, such as Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California. These requirements implement the Basin Plan.

The Basin Plan on page II-2.00 states that: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The beneficial uses of Miners Ranch Reservoir are not specifically identified in the Basin Plan. However, releases from Miners Ranch Reservoir via the Kelly Ridge Tunnel are tributary to the reach of the Feather River from below Lake Oroville to the Sacramento River (lower Feather River). The beneficial uses of the lower Feather River (from the "fish barrier dam" below Lake Oroville to the Sacramento River) are specifically identified in the Basin Plan. These beneficial uses are: municipal and domestic supply; agricultural irrigation supply; water contact and non-contact recreation; warm and cold freshwater habitat; migration of warm and cold aquatic organisms; warm and cold spawning, reproduction, and/or early development; and wildlife habitat. In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

The Discharger operates a hydropower facility that generates a significant quantity of electricity by utilizing water released from Miners Ranch Reservoir. Therefore, although the Basin Plan does not list specific beneficial uses for Miners Ranch Reservoir, and although hydropower generation is not listed as a beneficial use of the lower Feather River (to which Miners Ranch Reservoir is tributary), it is a beneficial use of Miners Ranch Reservoir.

The Basin Plan defines beneficial uses and with respect to disposal of wastewaters states that "...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses." Upon review of the flow conditions, habitat values, and beneficial uses of Miners Ranch Reservoir and the lower Feather River to which Miners Ranch Reservoir is tributary, the Regional Board finds that the beneficial uses identified in the Basin Plan for the lower Feather River, are applicable to Miners Ranch Reservoir, based upon the following facts:

- a. *Municipal and Domestic Supply, Agricultural Supply*

The Discharger operates a municipal water treatment plant to provide potable water to its customers. The raw water source for the water treatment plant is Miners Ranch Reservoir. In addition to customers served by the water treatment plant, other domestic and agricultural supply customers receive water released from Miners Ranch Reservoir. In addition to the existing water uses, growth in the area is expected to continue, which presents a potential for increased municipal, domestic, and agricultural uses of the water in Miners Ranch Reservoir.

b. *Hydropower Generation*

The Discharger operates a hydropower facility that generates a significant quantity of electricity by utilizing water released from Miners Ranch Reservoir. Therefore, although the Basin Plan does not list specific beneficial uses for Miners Ranch Reservoir, and although hydropower generation is not listed as a beneficial use of the lower Feather River (to which Miners Ranch Reservoir is tributary), it is a beneficial use of Miners Ranch Reservoir.

c. *Water Contact and Non-Contact Recreation*

Although Miners Ranch Reservoir is not a public access lake, the Regional Board finds that the lower Feather River flows through rural and residential areas and that there is ready public access. Water contact and non-contact recreational activities exist and are likely to increase as the population in the area grows. Flow in the lower Feather River is supported, in part, by releases from Miners Ranch Reservoir. Water quality in the lower Feather River is affected by the quality of waters discharging to it, including discharges from Miners Ranch Reservoir.

d. *Warm and Cold Freshwater Habitat, Migration of Aquatic Organisms, Spawning, Reproduction, and/or Early Development, and Wildlife Habitat*

Although Miners Ranch Reservoir is not a public access lake, and is not accessible to migrating aquatic organisms, releases of water from Miners Ranch Reservoir support beneficial uses in the lower Feather River. Water quality in the lower Feather River is affected by the quality of waters discharging to it, including discharges from Miners Ranch Reservoir. Warm and cold freshwater habitat, migration of aquatic organisms, spawning, reproduction, and/or early development, and wildlife habitat are beneficial uses that are highly sensitive to the quantity and quality of water present.

Groundwater

Unless designated otherwise by the Regional Board, the beneficial uses of groundwater of the Central Valley Region are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

Anti-Degradation

Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California, requires the Regional Board, in regulating the discharge of waste, to maintain high quality in surface and groundwaters of the State unless it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (i.e., in no circumstances can this Order allow water quality to exceed the Regional Board's water quality objectives). The Regional Board finds that the discharge, as restricted by the prohibitions, limitations, specifications, and provisions of this Order, is consistent with Resolution No. 68-16. The impact on water quality will be insignificant.

TMDLs and 303(d) Listings

Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations by point sources. For all 303(d) - listed water bodies and pollutants, the State Board is required to develop and adopt Total Maximum Daily Loads (TMDLs) that will specify wasteload allocations for point sources and load allocations for non-point sources, as appropriate. The United States Environmental Protection Agency (U.S. EPA) has approved the 2002 State Board 303(d) list of impaired water bodies. This extensive list does not include Miners Ranch Reservoir, however, the lower Feather River (from below Lake Oroville Dam to the Sacramento River) is listed as impaired for diazinon, Group A pesticides, mercury, and unknown toxicity. A Basin Plan amendment was adopted by the Regional Board on 16 October 2003, and added specific language to implement a TMDL for diazinon and limit discharges of diazinon to the lower Feather River and a portion of the Sacramento River. Miners Ranch Reservoir is tributary to the lower Feather River. A TMDL and Basin Plan amendment have not been adopted to address the other pollutants/stressors identified in the 303(d) listing for the lower Feather River.

GROUNDWATER MONITORING

This Order does not require the Discharger to conduct groundwater monitoring. There is no current evidence to indicate that discharges from the facility pose any unusual threat to groundwater quality. If any information becomes available indicating adverse groundwater impacts from the Discharger's operation, a groundwater investigation and subsequent monitoring may be required.

REASONABLE POTENTIAL ANALYSIS

U.S. EPA regulations at 40 CFR 122.4 (d) require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard. The National Toxics Rule (NTR) establishes water quality criteria for toxic pollutants applicable to the

Discharger at 40 CFR Part 131.36. On May 18, 2000 and by amendment on 13 February 2001, water quality criteria of the NTR were supplemented by criteria of the California Toxics Rule (CTR) at 40 CFR 131.38. The NTR, CTR, and the Basin Plan contain water quality standards applicable to the discharge.

The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP), which contains guidance on implementation of the CTR, including the determination of 'reasonable potential' for CTR pollutants. To determine 'reasonable potential' for non-CTR pollutants, the Regional Board relies on methodology presented in U.S. EPA's Technical Support Document for Water Quality Based Toxics Control (TSD) (EPA/505/2-90-001, 1991). And, for interpretation of narrative water quality objectives, the Regional Board uses its Compilation of Water Quality Goals (2000) as a resource.

On 5 February 2002, the Discharger collected effluent and receiving water samples for analysis of the CTR toxic priority pollutants. Analyses were performed for volatile substances, semi-volatile substances, metals, 2,3,7,8-TCDD dioxin, and sixteen other dioxin congeners and reported in accordance with procedures established by the SIP.

Methodology described in Section 1.3 of the SIP was used to evaluate the Discharger's monitoring data for the CTR priority toxic pollutants. No credit for dilution of the effluent with the receiving water was considered. Copper was detected at a concentration of 3.3 ug/L in the effluent and at 1.0 ug/L in the receiving water (total recoverable). The most stringent, applicable, water quality standards for copper are 2.2 ug/L (chronic) and 2.8 ug/L (acute), expressed as dissolved metal, from the CTR aquatic life criteria, based on a water hardness (as measured in the receiving water) of 19 mg/L as CaCO₃. Therefore, this Order includes hardness-dependent effluent limits for copper. The Regional Board has also determined that there is reasonable potential for chlorine in the discharge to cause or contribute to an in stream excursion above the narrative water quality objective of the Basin Plan for toxicity; and therefore, effluent limits for chlorine are included in this Order.

BASIS FOR PERMIT REQUIREMENTS

There are no technology-based, effluent limitations guidelines established for potable water treatment plants pursuant to Section 301 of the Clean Water Act.

Discharge Prohibitions

This Order contains prohibitions on bypass, discharge of hazardous and designated waste, and other non-permitted discharges. These prohibitions are retained from the previous Order No. 98-124 and are consistent with objectives of the Basin Plan, as required by the California Water Code and the Clean Water Act, to protect the beneficial uses of waters of the State.

Prohibitions regarding the discharge of solid wastes and chemicals, and discharges that cause a film, sheen, or discoloration, although important and applicable to all discharges, were added to this Order primarily to regulate the discharge of low threat wastewaters.

Effluent Limitations for Toxics (Discharge 001)

The Regional Board has performed a Reasonable Potential Analysis (RPA) to determine what priority, toxic pollutants are discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard. Copper was detected in the effluent at concentrations that, in accordance with methodology of the SIP, may cause or contribute to an in-stream excursion above a narrative or numerical water quality standard, and therefore, effluent limits for copper are implemented in this Order, as described below.

Dilution Considerations for Effluent Limit Calculations

In determining effluent limits, the Regional Board did not allow credit for the dilution of effluent with the receiving water. Effluent limits, therefore, have been established to meet the water quality standard at the point of discharge. The Regional Board may grant a dilution credit and a mixing zone only if a sufficient study and demonstration is made that a dilution credit is appropriate and protective of receiving water beneficial uses.

Copper

Hardness. The toxicity of certain metals, including copper, increases with decreasing water hardness concentrations. On 5 February 2002, hardness in the receiving water was measured at 19 mg/L as CaCO₃, and this figure has been used to determine reasonable potential for copper. As the toxicity of copper varies with water hardness, the effluent limits established for copper in this Order also vary as a function of receiving water hardness.

Translator. U.S. EPA regulations at 40 CFR 122.45 (c) require effluent limitations for metals to be expressed as total recoverable metal, and therefore, attention must be given to ensure that analytical data and water quality standards for metals are expressed accordingly. Appendix 3 of the SIP provides conversion factors (CFs) or translators, for certain metals including copper, to convert total recoverable concentrations to dissolved concentrations and vice versa. The CF for copper is 0.960 for both acute and chronic freshwater criteria.

Water Quality Criteria or Objective and Calculation of Effluent Limitations. The CTR chronic and acute criteria for copper for the protection of aquatic life are 2.2 and 2.8 ug/L, respectively, expressed as dissolved metal (dissolved), at a receiving water hardness of 19 mg/L as CaCO₃. The Regional Board has determined that the applicable water quality standards in these circumstances are the chronic and acute criteria from the CTR.

For each water quality criterion, an effluent concentration allowance (ECA) is calculated from the following equation to account for dilution and background levels of each pollutant.

$ECA = C + D(C - B)$, where C is the water quality criterion, D is the dilution credit, and B is the ambient background concentration. The ECA is also converted to total recoverable metal using the translator, as appropriate.

Because no credit for dilution is being allowed, D equals zero, and the ECA equals C. Here, $ECA_{\text{chronic}} = 2.3 \text{ ug/L}$ and $ECA_{\text{acute}} = 2.9 \text{ ug/L}$ (total recoverable metal) at a water hardness of 19 mg/L as CaCO_3 .

For each ECA based on an aquatic life criterion, the long-term average discharge condition (LTA) is determined by multiplying the ECA by a multiplier, taken from Table 1 of the SIP, to account for effluent variability. LTA multipliers are determined based on a coefficient of variation (CV) and on a specified probability of occurrence. The CV is a measure of the relative variations of a set of data. In the RPA for this facility, because there were fewer than 10 data points, the CV was set equal to a default value of 0.6. The ECA multipliers for calculating LTAs at the 99th percentile occurrence probability are 0.321 (acute multiplier) and 0.527 (chronic multiplier). Here, $LTA_{\text{chronic}} = 1.19 \text{ ug/L}$, and $LTA_{\text{acute}} = 0.94 \text{ ug/L}$ (total recoverable metal) at a water hardness of 19 mg/L as CaCO_3 .

Average monthly effluent limitations (AMELs) and maximum daily effluent limitations (MDELs) are calculated by multiplying the most limiting LTA ($LTA_{\text{acute}} = 0.94$) by a multiplier that accounts for averaging periods and exceedance frequencies of the effluent limitations, and for the AMEL, the effluent monitoring frequency. The CV was set equal to 0.6 and the sampling frequency was set equal to 4. A 99th percentile occurrence probability was used to determine the MDEL multiplier and a 95th percentile occurrence probability was used to determine the AMEL multiplier. From Table 2 of the SIP, the MDEL multiplier is 3.11, and the AMEL multiplier is 1.55. Final effluent limits for copper, derived from the CTR acute criterion for the protection of aquatic life, are:

AMEL = 1.5 ug/L (total recoverable) at a water hardness of 19 mg/L as CaCO_3 .

MDEL = 2.9 ug/L (total recoverable) at a water hardness of 19 mg/L as CaCO_3 .

The final AMEL and MDEL are water hardness dependent, and therefore the AMEL and MDEL used for compliance determination are variable and must be calculated. Attachment B - Copper includes a pre-calculated table of copper AMELs and MDELs for various water hardness values.

Compliance Schedule and Interim Effluent Limitations. Section 2.1 of the SIP allows the Regional Board to establish interim effluent limits and compliance schedules when a discharger demonstrates that it is infeasible to achieve immediate compliance with an effluent limit based on a CTR criterion. Before interim effluent limits and compliance schedules can be authorized, the Discharger must submit to the Regional Board:

- (a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream;
- (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed;
- (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and,
- (d) a demonstration that the proposed schedule is as short as practicable.

This Order requires the Discharger to provide such documentation for copper. Final effluent limits for copper will become effective 90 days after adoption of the Order unless adequate justification, meeting the requirements of Section 2.1 of the SIP, is completed and submitted by the Discharger. If adequate justification is submitted, the interim effluent limits described in this Order for copper will become effective and the final effluent limits will become effective 5 years after adoption of this Order in accordance with the compliance schedule established in this Order. This will allow the Discharger a period of time to fully comply with the effluent limit for copper.

Section 2.2.1 of the SIP requires, if a compliance schedule is granted for a CTR pollutant, that the Regional Board establish interim limitations and dates for their achievement in the NPDES permit. Interim limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent; and they must include interim compliance dates separated by no more than one year. Here, interim limitations for copper are based on current treatment plant performance, or 3.3 ug/L (total recoverable), which is the maximum concentration of copper detected in the water treatment plant's effluent to date. In developing the interim limitation, where there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, the interim limitation in this Order is established as the mean plus 3.3 standard deviations of the available data. Where actual sampling shows an exceedance of the proposed 3.3-standard deviation interim limit, the maximum detected concentration is established as the interim limitation. When there are less than ten sampling data points available, as there are for the Miners Ranch Water Treatment Plant, the TSD recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than ten sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed sampling point to obtain the daily maximum interim limitation (*TSD, Table 5-2*). The interim limitation for copper is 10 ug/L (3.3 ug/L x 3.11), expressed as total recoverable metal.

Effluent Limitations for Other Parameters (Discharge 001)

Settleable Solids

The Basin Plan includes a water quality objective that receiving waters not contain settleable material in concentrations that result in its deposition to cause nuisance or adversely affect beneficial uses. The proposed Order retains monthly average and daily maximum limitations for settleable solids of 0.1 mL/L and 0.2 mL/L, respectively. These limitations reflect removal efficiencies for properly designed, constructed and operated wastewater treatment systems.

Suspended Solids

The Basin Plan includes a water quality objective that receiving waters not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses. The proposed Order contains average monthly and daily maximum limitations for suspended solids limit of 30 and 50 mg/L, respectively. The Regional Board has determined that suspended solids are more likely to be resuspended than settleable solids in the washwater settling pond before discharge, and therefore, suspended solids concentrations are more likely to vary in the discharge than concentrations of settleable solids. Further, the limits for settleable solids are set at or near the lowest detectable concentration of settleable solids (0.1 mL/L), as measured by the volumetric Imhoff method. Monitoring since 1998 has consistently shown non detectable concentrations of settleable solids. Suspended solids concentrations are likely to fluctuate above the analytical detection levels so that suspended solids monitoring will be a better indicator of treatment performance.

To establish limitations for suspended solids, the Regional Board has examined several general permits, which regulate wastewater discharges from water treatment plants. A summary of these suspended solids limitations is presented in the table, below.

TSS Effluent Limitations of General Permits

	Effluent Limitation		
	30 Day Average (mg/L)	7 Day Average (mg/L)	Maximum Daily (mg/L)
Washington	Settleable solids, not TSS, is limited		
California Regional Board 2	30	45	NL
West Virginia	30	NL	60
South Carolina	30	NL	60
Arkansas	20	NL	30
Massachusetts	30	NL	50
New Hampshire	20	NL	50

NL = no limit

The Regional Board has also relied on research performed for the U.S. EPA in 1987. (SAIC, Model Permit Package for the Water Supply Industry, EPA Contract No. 68-01-7043) This study found that 76 percent of WTPs surveyed used sedimentation lagoons for wastewater treatment. In these facilities, limitations of 30 mg/L and 45 mg/L were representative of the, then, current permitting practice for average monthly and daily maximum TSS limits, respectively. Analysis of actual monitoring data from these facilities showed the 95th percent occurrence (monthly average) and 99th percent occurrence (daily maximum) levels of treatment to be 28.1 mg/L and 44.4 mg/L, respectively. The study recommended limitations of 30 and 45 mg/L as the monthly average and daily maximum suspended solids limits for a model NPDES permit.

Using best professional pursuant to Section 402 (a) (1) (b) of the Clean Water Act, the Regional Board is proposing to establish average monthly and daily maximum, technology based limitations for suspended solids of 30 and 50 mg/L, respectively.

pH

This Order requires effluent pH to remain between 6.0 and 9.0 units. This requirement, in addition to receiving water pH limitations, will ensure that the pH level in the receiving water remains within the Basin Plan objective range of 6.5 to 8.5.

Chlorine

The previous Order No. 98-063 did not include effluent limitations for chlorine but did include a receiving water limitation that prohibited chlorine at detectable levels in the receiving water. The Basin Plan includes a narrative water quality objective for toxicity that requires all receiving waters to be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. To interpret narrative criteria, the Regional Board relies on its *Compilation of Water Quality Goals* (2000), which includes U.S. EPA recommended, chronic and acute criteria for protection of aquatic life of 11 and 19 ug/L, respectively. Because filter backwash water is dechlorinated finished water, the Regional Board finds that there is reasonable potential for chlorine to be present in effluent above these applicable water quality criteria. Without close attention to chlorination/dechlorination processes, such operating events as changes in chlorine application rates, increased backwash rates or frequencies, and/or exhaustion of dechlorination chemicals could result in the discharge of elevated concentrations of chlorine, causing an exceedance of the applicable water quality criteria. Because chlorine is not addressed by the CTR, the Regional Board has followed methodology from the Technical Support Document for Water Quality Based Toxics Control (TSD) (EPA/505/2-90-001) (1991) to determine effluent limitations for chlorine.

For chlorine, waste load allocations (WLAs) are determined from the applicable water quality criteria. The WLA addresses variability in effluent quality and is expressed as a single level of receiving water quality necessary to provide protection against long term or chronic effects. When no credit is provided for dilution and background data are not available, the WLA is set equal to the applicable water quality criterion (C). Here, the applicable water quality criteria for chlorine are

11 and 19 ug/L, and the WLAs are equal to the criteria. The long-term average discharge conditions (LTAs) are determined by multiplying the WLA times a multiplier to account for effluent variability. From Table 5-1 of the TSD, at the 99th percentile probability basis, the acute WLA multiplier is 0.321 and the chronic WLA multiplier is 0.527. The WLAs, WLA multipliers, and the LTAs for chlorine are summarized as follows.

	WLA		WLA Multiplier		LTA (µg/L)	
	Acute	Chronic	Acute	Chronic	Acute	Chronic
Chlorine	19	11	0.321	0.527	6.1	6.0

AMELs and MDELs are calculated by multiplying the most limiting (lowest) LTA by a multiplier that accounts for averaging periods, exceedance frequencies of the effluent limitations, and the effluent monitoring frequency. Here, the CV was set equal to 0.6 and, in the case of the AMEL, the sampling frequency was set equal to 4 (n = 4). A 99th percentile occurrence probability was used to determine the MDEL multiplier and a 95th percentile occurrence probability was used to determine the AMEL multiplier. From Table 5-2 of the TSD, the MDEL multiplier is 3.11, and the AMEL multiplier is 1.55. Effluent limits for chlorine are determined as follows.

	LTA	MDEL Multiplier	AMEL Multiplier	MDEL (mg/L)	AMEL (mg/L)
Chlorine	6.0	3.11	1.55	0.02	0.01

This Order adds an average monthly effluent limit for chlorine of 0.01 mg/L and a maximum daily effluent limit for chlorine of 0.02 mg/L.

Requirements for Dewatering and Other Low Threat Discharges

Currently, the Discharger is obligated to seek authorization under Regional Board Order No. 5-00-175, *General Order for Dewatering and Other Low Threat Discharges to Surface Waters*, prior to discharging water associated with construction, start up, testing, maintenance, and repair of its raw water supply and potable water distribution systems. Provisions in this Order pertaining to such discharges are meant to authorize such low threat discharges so that the Discharger is no longer obligated to seek coverage under the General Permit.

Storm Water Management

U.S. EPA regulations require coverage under an NPDES permit for facilities that discharge storm water associated with industrial activity. Although the previous Order No. 98-063 contained provisions pertaining to discharges of storm water, this current Order does not address such discharges, and the Discharger must seek authorization for storm water discharges under the *General Permit for Discharges of Storm Water Associated with Industrial Activities* (SWRCB, Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001), if applicable.

Sludge Handling and Disposal

This Order requires the Discharger to review and update its existing Sludge Disposal Plan within 180 days of adoption of this Order, to assure proper handling and disposal of solids that are collected and/or generated at the water treatment plant.

Establishment of Mass-Based Effluent Limits and Effluent Flow Limit

The maximum daily flow limit in the previous Order No. 98-063 was 0.9 mgd, based on a filter backwash rate of 0.6 mgd and a filter-to-waste flow rate of 0.3 mgd. The Discharger has requested (e-mail communication from Jim Coffelt, Water Treatment Superintendent on 19 May 2004) a maximum daily flow limit of 1.03 mgd, based on a filter backwash rate of 5 percent of production (14.53 mgd x 0.05 = 0.73 mgd) and a filter-to-waste flow rate of 0.3 mgd. And, in the summer of 2004, the Discharger will be studying increased filter loading rates, which will result in a possible discharge rate of 1.66 mgd, based on a filter backwash rate of 7.5 percent of production (18.16 mgd x 0.075 = 1.36 mgd) and a filter-to-waste flow rate of 0.3 mgd. An increase in filter backwash rate is anticipated with higher loading rates on the filters. Therefore, this Order includes a maximum flow limit of 1.03 mgd, except during the special study period, when the Discharger will be studying increased filter loading rates, and the maximum daily (discharge) flow limit will be 1.66 mgd. The Discharger's estimates of filter backwash rates are generally in line with the industry rule-of-thumb that backwash rates will be 2 to 10 percent of production. This Order also provides for a permanent increase in the maximum daily flow limit to 1.66 mgd, if requested by the Discharger, and if the Department of Health Services approves continued operation at the filter loading rates examined by the Discharger in the summer of 2004. Any additional increase in the facility's discharge rate, above 1.66 mgd, due to plant expansion or increased production, must be approved by the Regional Board following submittal of a Report of Waste Discharge to modify the discharge permit. Mass based limits in this Order are based on effluent flow rates of 1.03 and 1.66 mgd, which reflect current and projected effluent flows, as explained above. For example, to calculate the mass-based limitation that corresponds to the maximum daily limit for suspended solids of 50 mg/L:

$$\text{Mass-based limit} = 50 \text{ mg/L} \times 1.03 \text{ mgd} \times 8.34 = 430 \text{ lbs/day.}$$

Permit Reopener

This Order contains provisions that allow the Order to be reopened if, after a review of any monitoring results, it is determined that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above water quality standards, and effluent limits based on those standards added. Additionally, if pollutants are detected in discharges from the Discharger's facility, but insufficient information exists to establish an effluent limit or determine if an effluent limit is necessary, then additional monitoring may be required to provide sufficient information.

The Discharger may conduct studies pertaining to Facility operations, the effluent discharge, and the receiving water. For example, such studies may include a site-specific metals translator study, or a mixing zone and dilution study. If requested, the Regional Board will review such studies and, if warranted, reopen this Order to make appropriate changes.

BASIS FOR MONITORING REQUIREMENTS

Section 308 of the CWA and U.S. EPA regulation 40 CFR 122.44 (i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Discharger is responsible for conducting monitoring and for reporting the results to the U.S. EPA using Discharge Monitoring Reports. The self-monitoring program requires monitoring of receiving water and effluent, storm water, sludge, and low threat discharges.

The Monitoring and Reporting Program retains monitoring of receiving water for pH and turbidity, and it includes visual monitoring of conditions upstream and downstream of the point of discharge. One time in the five year life cycle of the permit, receiving water must also be monitored, concurrently with effluent, for the CTR priority, toxic pollutants. These receiving water samples must be collected in an upstream/background location.

Effluent monitoring of discharges through Discharge 001 includes flow, pH, turbidity, settleable solids, and chlorine residual. This Order also adds effluent monitoring for suspended solids, aluminum, copper, acute and chronic toxicity, and the CTR pollutants. Monitoring for suspended solids is required to determine compliance with new limitations for suspended solids. Acute toxicity monitoring is required to assure compliance with the effluent limitation for toxicity in the Order and is established based on recommendations of the Basin Plan to assure compliance with the narrative toxicity objective. Chronic toxicity monitoring is required by the SIP in addition to acute toxicity monitoring and is to assure compliance with the narrative toxicity objective of the Basin Plan and to determine the need for a chronic toxicity limitation. Because both chronic and acute toxicity monitoring is required by the SIP, and because discharges from the water treatment facility are expected to exhibit low, if any, toxicity, chronic toxicity testing is required at the minimum possible frequency (one time during the permit term), and acute toxicity testing is required on an annual basis. Monitoring for the toxic pollutants is required to determine compliance with the effluent limitations established for those pollutants by this Order. In the case of aluminum, monitoring is required to determine the need for effluent limitations. Monitoring of the effluent and receiving water is also required once during the term of this Order for the CTR pollutants. Effluent monitoring requirements for Discharge 001 are summarized by the following table.

Effluent Monitoring Requirements – Discharge 001

Constituent	Units	Type of Sample	Sample Frequency
Flow	mgd	meter	continuous
pH	pH units	grab	weekly
Turbidity	NTUs	grab	weekly
Chlorine	mg/L	grab	weekly
Settleable Solids	mL/L	grab	twice per month
Suspended Solids	mg/L	grab	twice per month
Aluminum	µg/L	grab	quarterly
Copper	µg/L	grab	quarterly
Hardness	mg/L	grab	quarterly
Acute toxicity	TUa	grab	annually
Chronic Toxicity	TUc	grab	one time in permit lifecycle
CTR Pollutants	µg/L	24 hr composite	one time in permit lifecycle

In accordance with the Basin Plan and the SIP, the Monitoring and Reporting Program includes considerable detail regarding acute and chronic toxicity monitoring procedures, as well as considerable detail regarding analytical procedures and reporting requirements for the CTR. New monitoring and reporting requirements for low threat discharges are included in this Order, and sludge monitoring requirements of the previous Order are retained.

BJS